- (a) the track of the navigation system;
- (b) the heading of the navigation system;
- (c) the velocity of the navigation system;
- (d) the acceleration of the navigation system;
- (e) the pitch and roll of the navigation system; and
- (f) the position of the navigation system.

Remarks:

Claims 1,3,5,19,20,22 and 31 are herein amended

Respectfully submitted,

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l	1. (Amended) A navigation system, comprising:
2	(a) a GPS receiver adapted to receive electromagnetic signals from a plurality of
3	satellites, said GPS having a first output for providing a signal indicative of the

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(b) a magnetometer positionable for measuring one or more components of the earth's magnetic field, said magnetometer having a second output for providing a signal indicative thereof;

position of [said GPS receiver] the navigational system;

- (c) an [accelerometer] acceleration sensor for measuring one or more [axes] axis of acceleration of the navigational system, said [accelerometer] acceleration sensor having a third output for providing a signal indicative thereof; [a] 10
 - (d) a [3-axes rate gyroscopes] rotation sensor for measuring [the rate] one or more axis of rotation of the navigational system, said [rate gyroscope] rotation sensor having a fourth output for providing a signal indicative thereof; and (e) a computing device having:
 - a plurality of inputs, at least one input of said plurality of inputs in (ii) communication with each of said first, second, third, and fourth outputs; and
 - a database of the magnetic fields of the earth. (ii)

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1	3. (Amended) The navigation system of claim 1 wherein said <u>rotation sensor</u> [3-axes rate
2	gyroscope] is a MEMS based [rate] gyroscope.

- 5. (Amended) The navigation system of claim 1 [further comprising an aural transducer
- for communicating audible information from said computing device] wherein said
- 3 acceleration sensor is a MEMS based accelerometer.

19. (Amended) A navigation system, comprising:

a Global Positioning Sensor receiver adapted to receive electromagnetic signals from a plurality of satellites to determine a position, said Global Positioning Sensor receiver having a first output for providing a signal indicative said position,

an accelerometer for measuring one or more independent components of acceleration, said accelerometer having a second output for providing a signal indicative of said one or more independent components of acceleration;

a [rate] gyroscope for measuring three independent components [of rate] of rotation, said rate gyroscope having a third output for providing a signal indicative of said three independent components of rate of rotation;

a display for visually displaying navigation information to an operator,

a computing device having a plurality of inputs for in communication with
said first, second, and third outputs; and

a housing wherein is housed said Global Positioning Sensor receiver, said accelerometer, and said rate gyroscope, wherein said housing is configured such that the navigation system is portable.

- 1 20. The navigation system of claim 19 wherein said [rate] gyroscope[s] [are] is MEMS
- 2 based.
- 1 22. The navigation system of claim 19 [further comprising a display for visually displaying
- 2 navigation information to an operator] wherein said accelerometer is MEMS based.
- 1 31. The navigation system of claim [22] 19 wherein said display can be configured to
- display at least one navigational parameter selected from the group consisting of:.
- 3 (a) the track of [a vehicle] the navigation system;
- 4 (b) the heading of the [vehicle] <u>navigation system;</u>
- 5 (c) the velocity of the [vehicle] <u>navigation system;</u>
- 6 (d) the acceleration of the [vehicle] <u>navigation system;</u>
- 7 (e) the pitch and roll of the [vehicle] <u>navigation system</u>; and
- 8 (f) [the braking status] the position of the [vehicle] navigation system.